

## VERSION OF CLAIMS WITHOUT MARKINGS

### IN THE CLAIMS:

Please insert claims 7 – 62 as follows:

- 1 7. (NEW) A data processing system implemented method managing associations among  
2 a plurality of data objects, said plurality of data objects are categorized by data type and  
3 associated with data stored in a plurality of location subdivisions based on data type, the  
4 method comprising:
- 5 receiving a first request for a data object associated first data object from a client,  
6 said request includes a first data object identifier, wherein said first data object is  
7 categorized as being a first data type;
- 8 identifying a first location subdivision for the first data object identifier;
- 9 accessing first fragmented association information corresponding with said first  
10 location subdivision, wherein the first fragmented association information includes  
11 association information related to data objects stored in said first location subdivision;
- 12 finding, in the first fragmented association information, a data object associated  
13 with said first data object based on the first data object identifier; and
- 14 returning information related to the data object or objects associated with said first  
15 data object to the client.
- 1 8. (NEW) The method recited in claim 7, wherein data type comprises entity  
2 information.

1 9. (NEW) The method recited in claim 7 further comprises:  
2 receiving a second request for a data object associated second data object from a  
3 client, said second request including a second data object identifier, wherein said first and  
4 second data objects are categorized as being the first type data;  
5 identifying a second location subdivision for the second data object identifier;  
6 accessing second fragmented association information corresponding with said  
7 second location subdivision, wherein the second fragmented association information  
8 includes association information related to data objects stored in said second location  
9 subdivision;  
10 finding, in the second fragmented association information, a data object  
11 associated with said second data object based on the second data object identifier; and  
12 returning information related to the data object associated with said second data  
13 object to the client.

1 10. (NEW) The method recited in claim 7, wherein information related to the data object  
2 associated with said first data object is an instance of the data object associated with said  
3 first data object.

1 11. (NEW) The method recited in claim 9, wherein the first fragmented association  
2 information corresponding with said first location subdivision, and the second  
3 fragmented association information corresponding with said second location subdivision  
4 information are stored external to respective said first location subdivision and said  
5 second location subdivision.

1 12. (NEW) The method recited in claim 11, wherein the first fragmented association  
2 information and the first subdivision reside in a first proximity domain.

1 13. (NEW) The method recited in claim 12, wherein the second fragmented association  
2 information and the second location subdivision information reside in a second proximity  
3 domain.

1 14. (NEW) The method recited in claim 13, wherein said first proximity domain and  
2 said second proximity domain are overlapping.

1 15. (NEW) The method recited in claim 9, wherein a first partition service manages data  
2 objects for the first location subdivision and a second partition service manages data  
3 objects for the second location subdivision.

1 16. (NEW) The method recited in claim 7, wherein said request for a data object  
2 associated first data object from a client further includes a requested data type, finding in  
3 the first fragmented association information a data object associated with said first data  
4 object based on the first data object identifier further comprises:

5 traversing the first fragmented association information based on the requested  
6 data type and the first data object identifier.

1 17. (NEW) The method recited in claim 7, wherein an association service receives the  
2 request for a data object associated first data object from a client.

1 18. (NEW) The method recited in claim 17, wherein the first data object identifier is a  
2 unique primary key (PK) and identifying a first location subdivision for the first data  
3 object identifier further comprises:

4 accessing a plurality of primary key (PK)-location subdivision maps held in a  
5 satellite cache, wherein said satellite cache and association service are in a local domain;  
6 and

7 looking up a location subdivision identifier for the first location subdivision in the  
8 plurality of PK-location subdivision maps from the satellite cache based on the unique  
9 PK for the first data object.

1 19. (NEW) The method recited in claim 18, wherein looking up the location subdivision  
2 identifier in the satellite cache using the plurality of PK-location subdivision maps returns  
3 a null set of location subdivision identifiers, identifying a first location subdivision for the  
4 first data object identifier further comprises:

5 accessing a plurality of PK-location subdivision maps held in an enterprise  
6 repository, wherein said enterprise repository is external to the local domain; and

7 looking up the location subdivision identifier for the location subdivision holding  
8 the data object in the plurality of PK-location subdivision maps in the enterprise  
9 repository based on the unique PK for the first data object.

1 20. (NEW) The method recited in claim 19, wherein looking up the location subdivision  
2 identifier in the enterprise repository using the plurality of PK-location subdivision maps  
3 returns a null set of location subdivision identifiers identifying a location subdivision  
4 holding the first data object further comprises:

5 finding a steward;

6 requesting the identity of the location subdivision holding the first data object  
7 from the steward, wherein said steward issues a query to each location subdivision for the  
8 identity of the location subdivision holding the first data object; and

9 returning the identity of the location subdivision holding the first data object to  
10 the association service.

1 21. (NEW) The method recited in claim 20, wherein the steward manages data objects of  
2 the first data type.

1 22. (NEW) The method recited in claim 7, wherein information related to the data object  
2 associated with said first data object comprises instances of all data objects associated  
3 with the first data object identifier.

1 23. (NEW) A data processing system implemented method for managing associations  
2 among a plurality of data objects comprising:  
3 categorizing a plurality of data objects by data type;  
4 subdividing data objects of a first data type into a first plurality of subdivisions;  
5 subdividing data objects of a second data type into a second plurality of  
6 subdivisions;  
7 storing data objects in the first plurality of subdivisions in a respective first  
8 plurality of location subdivisions;  
9 storing data objects in the second plurality of subdivisions in a respective second  
10 plurality of location subdivisions;  
11 defining associations between each data object in each of the first plurality of  
12 location subdivisions and all data objects in each of the second plurality of location  
13 subdivisions;  
14 forming a fragmented association record corresponding with each location  
15 subdivision of the first plurality of location subdivisions, wherein each fragmented  
16 association record comprises association information related to data objects stored in a  
17 one of the first plurality of location subdivisions;  
18 defining associations between each data objects in each of the second plurality of  
19 location subdivisions and all data objects in each of the first plurality of location  
20 subdivisions; and  
21 forming a fragmented association record corresponding with each location  
22 subdivision of the second plurality of location subdivisions, wherein each fragmented  
23 association record comprises association information related to data objects stored in a  
24 one of the second plurality of location subdivisions.

1 24. (NEW) The method recited in claim 23, wherein each said fragmented association  
2 record is stored external to the corresponding location subdivision.

1 25. (NEW) The method recited in claim 23, wherein a fragmented association record  
2 corresponding with one of the first plurality of location subdivisions contains association  
3 information defining a plurality of associations for one of the data objects.

1 26. (NEW) The method recited in claim 23, wherein data type comprises entity  
2 information.

- 1 27. (NEW) A data processing system implemented program product embodied on a  
2 processing system readable medium for implementing a method for managing  
3 associations among a plurality of data objects, said plurality of data objects are  
4 categorized by data type and associated with data stored in a plurality of location  
5 subdivisions based on data type, the program product comprising:
- 6 instructions for receiving a request for a data object associated first data object  
7 from a client, said request includes a first data object identifier, wherein said first data  
8 object is categorized as being a first data type;
- 9 instructions for identifying a first location subdivision for the first data object  
10 identifier;
- 11 instructions for accessing first fragmented association information corresponding  
12 with said first location subdivision, wherein the first fragmented association information  
13 includes association information related to data objects stored in said first location  
14 subdivision;
- 15 instructions for finding in the first fragmented association information a data  
16 object associated with said first data object based on the first data object identifier; and
- 17 instructions for returning information related to the data object or objects  
18 associated with said first data object to the client.
- 1 28. (NEW) The program product recited in claim 27, wherein data type comprises entity  
2 information.



1 29. (NEW) The program product recited in claim 27 further comprises:

2 instructions for receiving a second request for a data object associated second  
3 data object from a client, said second request includes a second data object identifier,  
4 wherein said first and second data objects are categorized as being the first data type;

5 instructions for identifying a second location subdivision for the second data  
6 object identifier;

7 instructions for accessing second fragmented association information  
8 corresponding with said second location subdivision, wherein the second fragmented  
9 association information includes association information related to data objects stored in  
10 said second location subdivision;

11 instructions for finding in the second fragmented association information a data  
12 object associated with said second data object based on the second data object identifier;  
13 and

14 instructions for returning information related to the data object associated with  
15 said second data object to the client.

1 30. (NEW) The program product recited in claim 27, wherein information related to the  
2 data object associated with said first data object is an instance of the data object  
3 associated with said first data object.

1 31. (NEW) The program product recited in claim 29, wherein the first fragmented  
2 association information corresponding with said first location subdivision, and the second  
3 fragmented association information corresponding with said second location subdivision  
4 information are stored external to respective said first location subdivision and said  
5 second location subdivision.

1 32. (NEW) The program product recited in claim 31, wherein the first fragmented  
2 association information and the first location subdivision reside in a first proximity  
3 domain.

1 33. (NEW) The program product recited in claim 32, wherein the second fragmented  
2 association information and the second location subdivision information reside in a  
3 second proximity domain.

1 34. (NEW) The program product recited in claim 33, wherein said first proximity  
2 domain and said second proximity domain are first and second multicast domains.

1 35. (NEW) The program product recited in claim 29 further comprises:  
2 instructions for implementing a first partition service for managing data objects  
3 for the first location subdivision; and  
4 instructions for a second partition service for managing data objects for the  
5 second location subdivision.

1 36. (NEW) The program product recited in claim 27, wherein said request for a data  
2 object associated first data object from a client further includes a requested data type, the  
3 instructions for finding in the first fragmented association information, a data object  
4 associated with said first data object based on the first data object identifier further  
5 comprises:  
6 instructions for traversing the first fragmented association information based on  
7 the requested data type and the first data object identifier.

1 37. (NEW) The program product recited in claim 27 further comprises;  
2 instructions for implementing an association service for executing instructions for  
3 receiving the request for a data object associated first data object from a client.

1 38. (NEW) The program product recited in claim 37, wherein the first data object  
2 identifier is a unique primary key (PK) and the instructions for identifying a first location  
3 subdivision for the first data object identifier further comprises:

4 instructions for implementing a satellite cache service for holding a plurality of  
5 primary key (PK)-location subdivision maps, wherein said satellite cache service and  
6 association service are implemented in a local domain;

7 instructions for accessing the plurality of primary key (PK)-location subdivision  
8 maps held by the satellite cache service; and

9 instructions for looking up a location subdivision identifier for the first location  
10 subdivision in the plurality of PK-location subdivision maps from the satellite cache  
11 service based on the unique PK for the first data object.

1 39. (NEW) The program product recited in claim 38 wherein instructions for identifying  
2 a first location subdivision for the first data object identifier further comprises:

3 instructions for implementing an enterprise repository service for holding and  
4 accessing a plurality of PK-location subdivision maps, wherein executing instructions for  
5 implementing said enterprise repository is performed externally to the local domain; and  
6 instructions for looking up the location subdivision identifier for the location subdivision  
7 holding the data object in the plurality of PK-location subdivision maps in the enterprise  
8 repository service based on the unique PK for the first data object in response to  
9 executing instructions for looking up the location subdivision identifier in the satellite

10 cache service using the plurality of PK-location subdivision maps returns a null set of  
11 location subdivision identifiers.

1 40. (NEW) The program product recited in claim 39, wherein instructions for looking up  
2 the location subdivision identifier in the enterprise repository using the plurality of PK-  
3 location subdivision maps further comprises:

4 instructions for finding a steward service in response to executing instructions for  
5 looking up the location subdivision identifier in the enterprise repository returns a null set  
6 of location subdivision identifiers identifying a location subdivision holding the first data  
7 object;

8 instructions for requesting the identity of the location subdivision holding the first  
9 data object from the steward service, wherein said steward service issues a query to each  
10 location subdivision for the identity of the location subdivision holding the first data  
11 object; and

12 instructions for returning the identity of the location subdivision holding the first  
13 data object to the association service.

1 41. (NEW) The program product recited in claim 40, wherein the steward service  
2 manages data objects of the first data type.

1 42. (NEW) The program product recited in claim 27, wherein information related to the  
2 data objects associated with said first data object comprises instances of all data objects  
3 associated with the first data object identifier.

1 43. (NEW) A data processing system implemented program product embodied on a data  
2 processing system processing system readable medium for implementing a method for  
3 managing associations among a plurality of data objects, the program product  
4 comprising:

5 instructions for categorizing a plurality of data objects by data type;

6 instructions for subdividing data objects of a first data type into a first plurality of  
7 subdivisions;

8 instructions for subdividing data objects of a second data type into a second  
9 plurality of subdivisions;

10 instructions for storing data objects in the first plurality of subdivisions in a  
11 respective first plurality of location subdivisions;

12 instructions for storing data objects in the second plurality of subdivisions in a  
13 respective second plurality of location subdivisions;

14 instructions for defining associations between each data object in each of the first  
15 plurality of location subdivisions and all data objects in each of the second plurality of  
16 location subdivisions;

17 instructions for forming a fragmented association record corresponding with each  
18 location subdivision of the first plurality of location subdivisions, wherein each  
19 fragmented association record comprises association information related to data objects  
20 stored in a one of the first plurality location subdivisions;

21 instructions for defining associations between each data objects in each of the  
22 second plurality of location subdivisions and all data objects in each of the first plurality  
23 of location subdivisions; and

24 instructions for forming a fragmented association record corresponding with each  
25 location subdivision of the second plurality of location subdivisions, wherein each  
26 fragmented association record comprises association information related to data objects  
27 stored in a one of the second plurality location subdivisions.

1 44. (NEW) The program product recited in claim 43, wherein each said fragmented  
2 association record is stored external to the corresponding location subdivision.

1 45. (NEW) The program product recited in claim 43, wherein a fragmented association  
2 record corresponding with one of the first plurality of location subdivisions contains  
3 association information defining a plurality of associations for one of the data objects.

1 46. (NEW) The program product recited in claim 43, wherein data type comprises entity  
2 information.

1 47. (NEW) A system for managing associations among a plurality of data objects  
2 comprising:

3 a plurality of network domains, wherein each of the network domains comprises:

4 a first data processing system of the plurality of multipurpose data  
5 processing systems including a first processor and a first memory for running a  
6 first partition service, said first partition service manages data stored locally in  
7 said memory, wherein said data is a first type;

8 a second data processing system of the plurality of multipurpose data  
9 processing systems including a processor and a memory for running a second  
10 partition service, said second partition service manages data stored locally in said  
11 second memory, wherein said data is a second type; and

12 a third data processing system including a processor and a memory for  
13 running a satellite service, said satellite service maintains a plurality of primary  
14 key (PK)-partition maps for identifying a partition service managing a data object  
15 by a unique PK;

16 a fourth data processing system including a processor and a memory for  
17 running a first fragmented association engine information corresponding with said  
18 first partition service, said first fragmented association engine manages  
19 association information related to data objects managed by said first partition  
20 service; and

21 a fifth data processing system including a processor and a memory for  
22 running a second fragmented association engine information corresponding with  
23 said second partition service, said second fragmented association engine manages  
24 association information related to data objects managed by said second partition  
25 service; and

26 a sixth data processing system including a processor and a memory for  
27 running a steward service, said steward service manages a plurality of PKs for a  
28 first data type.

1 48. (NEW) The system recited in claim 47, wherein said third data processing system is  
2 one of said first data processing system and said second data processing system.

1 49. (NEW) The system recited in claim 47, wherein said steward service issues a query  
2 to said first partition service and second partition service for an identity of a partition  
3 service managing a data object based on a unique PK.

1 50. (NEW) The system recited in claim 47, wherein data type comprises entity  
2 information.



1 51. (NEW) The method recited in claim 47, wherein each of the network domains  
2 comprises a data processing system for running an association service, said association  
3 service comprises:

4 receives a request for a data object from a client, said request includes a data  
5 object identifier for an identified data object;

6 identifies a third partition service based on the data object identifier for the  
7 identified data object;

8 references a fragmented association engine corresponding with said third partition  
9 service, said fragmented association engine manages association information related to  
10 data objects managed by said third partition service;

11 finds a fourth partition service based on said fragmented association engine  
12 corresponding with said third partition service; and

13 returns information related to the requested data object associated with said  
14 identified data object to the client.

1 52. (NEW) The system recited in claim 51, wherein information related to the requested  
2 data object associated with said identified data object is an instance of the requested data  
3 object.

1 53. (NEW) The system recited in claim 47, wherein the first fragmented association  
2 engine corresponding with said first partition service, and the second fragmented  
3 association engine corresponding with said second partition service are stored external to  
4 respective said first partition service and said second partition service.

1 54. (NEW) The system recited in claim 47, wherein the first fragmented association  
2 service and the first partition service reside in a first proximity network domain.

1 55. (NEW) The system recited in claim 47, wherein the second fragmented association  
2 engine and the second partition service reside in a second proximity network domain.

1 56. (NEW) The system recited in claim 55, wherein said first proximity network domain  
2 and said second proximity network domain are overlapping.

1 57. (NEW) The system recited in claim 51, wherein said request for a data object  
2 associated with said data object from a client further includes a requested data type, said  
3 fragmented association engine traverses said association information related to data  
4 objects managed by said third partition service based on the requested data type and the  
5 data object identifier.

1 58. (NEW) The system recited in claim 51, wherein the data object identifier is a unique  
2 primary key (PK) and said association service identifies a third partition service based on  
3 the data object identifier for the identified data object using said satellite service, wherein  
4 said satellite service and association service are in a local network domain, said satellite  
5 service looks up partition service identifier for the third partition service in the plurality  
6 of PK-partition maps from the satellite service based on the unique PK for the identified  
7 data object.

1 59. (NEW) The system recited in claim 58 further comprises:

2 a seventh data processing system including a processor and a memory for running  
3 an enterprise service, said enterprise service manages a plurality of PK-partition service  
4 maps for the plurality of network domains, wherein a partition service identifier for a  
5 partition service managing said identified data object is identified in the plurality of PK-  
6 partition service maps for the plurality of network domains based on the unique PK for  
7 the identified first data object in response to said satellite service returning a null set of  
8 partition service identifiers.

1 60. (NEW) The system recited in claim 59, wherein in response to the enterprise  
2 repository returning a null set of partition identifiers, said association service utilizes said  
3 steward service for identifying a partition service managing the identified data object.

1 61. (NEW) The system recited in claim 60, wherein the steward manages data objects of  
2 the first data type.

1 62. (NEW) The system recited in claim 51, wherein information related to the requested  
2 data object associated with said identified data object comprises instances of all data  
3 objects associated with the data object identifier.